

CLAIMS

1. A rotary machine having a rotor, a stator, and blade rows on the rotor and stator that impart a high swirl
5 component to gases flowing through the machine so that the denser impurities are deflected radially outwards by centripetal action onto the inner wall of the stator of the machine, wherein a guide surface is provided on the inner wall of the stator along which any impurities separated by
10 the centripetal action from the main gas stream are entrained by the main gas stream and guided to flow from the gas intake side to the gas outlet side of the machine, the guide surface being radially stepped to resist only reverse flow of the separated impurities back towards the gas intake
15 side of the machine and being operative at the downstream end of the machine to discharge the separated impurities back into the main gas stream for the impurities to exit from the machine with the main gas stream.

20 2. A rotary machine as claimed in claim 1, wherein the guide surface is rotationally symmetrical about the axis of the rotor.

3. A rotary machine as claimed in claim 1, wherein
25 the guide surface is formed by at least one groove in the inner wall of the stator that only extends around part of the circumference of the stator.

4. A rotary machine as claimed in claim 3, wherein
30 the groove is arranged at the lower end of the stator such that separated impurities collect in the groove by the action of gravity.